

Notice of Allowability

Application No.

09/731,671

Examiner

Chih-Cheng Glen Kao

Applicant(s)

NAHUM ET AL.

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 9/10/04.
2. ☒ The allowed claim(s) is/are 1-7, 9-11, 14, 17, 18, 22, 23, 30, 32-35 and 41-58.
3. ☒ The drawings filed on 10 September 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>9/10/04</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Gerhard Thielman on November 8, 2004.

2. The application has been amended as follows:

In claim 1, line 23; insert - -correlation- - between "image-dependent" and "function"

In claim 1, line 25, in the phrase "the second side"; replace "the" with - -a- -

In claim 22, line 19, in the phrase "extremum,"; replace the comma with - -and- -

In claim 22, line 20; insert - -approximately- - between "that is" and "the negative"

In claim 22, lines 25-27; delete ", and determining the spatial translation position
corresponding to the intersection of the first and second lines"

In claim 33, line 39; delete "when"

In claim 41, line 4, in the phrase "the light"; delete "the"

In claim 41, line 27; insert - -points- - between "value" and "comprising"

In claim 41, line 31, in the phrase "the ratio"; replace "the" with - -a- -

In claim 41, line 31, in the phrase "of the peak-to-peak"; delete "the"

In claim 44, line 2; replace "system" with - -device- -

In claim 44, line 17, in the phrase "the estimates"; delete "the"

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In claim 44, line 17; insert - -of- - between “estimates” and “the spatial translation”

In claim 44, line 24; insert - -correlation- - between “image-dependent” and “function”

In claim 44, line 26, in the phrase “the second side”; replace “the” with - -a- -

In claim 46, line 23; insert - -correlation- - between “image-dependent” and “function”

In claim 46, line 25, in the phrase “the second side”; replace “the” with - -a- -

In claim 50, line 11, in the phrase “indicative of the displacement”; delete “the”

In claim 50, line 16, in the phrase “extremum,”; replace the comma with - -and- -

In claim 50, line 17; insert - -approximately- - between “that is” and “the negative”

In claim 50, lines 22-24; delete “, and determining the spatial translation position
corresponding to the intersection of the first and second lines”

In claim 51, line 14, in the phrase “corresponding to the at least”; delete “the”

In claim 51, line 17, in the phrase “extremum,”; replace the comma with - -and- -

In claim 51, line 18; insert - -approximately- - between “that is” and “the negative”

In claim 51, lines 23-25; delete “, and determining the spatial translation position
corresponding to the intersection of the first and second lines”

In claim 52, line 24; insert - -correlation- - between “image-dependent” and “function”

In claim 52, line 26, in the phrase “the second side”; replace “the” with - -a- -

In claim 54, line 16, in the phrase “corresponding to the at least”; delete “the”

In claim 54, line 17; delete the hyphen between “two” and “image”

In claim 54, line 19, in the phrase “extremum,”; replace the comma with - -and- -

In claim 54, line 20; insert - -approximately- - between “that is” and “the negative”

In claim 54, lines 25-27; delete “, and determining the spatial translation position corresponding to the intersection of the first and second lines”

Reasons for Allowance

3. Claims 1-7, 9-11, 14, 17, 18, 22, 23, 30, 32-35, and 41-58 are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding claims 1, 44, 46, and 52, prior art does not disclose or fairly suggest a method or device including wherein estimating a spatial translation position corresponding to at least one respective symmetry point comprises determining the midpoint of at least one line segment having a first endpoint that is one of a) an image-dependent correlation function value point, and b) an estimated correlation function value point lying on the correlation function on a first side of the correlation function extremum, and a second endpoint that is one of a) an image-dependent correlation function value point, and b) an estimated correlation function value point lying on the correlation function on a second side of the correlation function extremum, in combination with all the limitations in each respective claim. Claims 2-7, 9-11, 14, 17, 18, 45, 47-49, and 53 are allowed by virtue of their dependency.

Regarding claims 22, 50, 51, and 54, prior art does not disclose or fairly suggest a method or device including wherein estimating a spatial translation position corresponding to at least one respective symmetry point comprises determining a first line including two image-dependent correlation function value points lying on a correlation function on a first side of the correlation function extremum and determining a second line having a slope that is approximately the

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negative of the slope of the first line and that includes an image-dependent correlation function value point lying on the correlation function on a second side of the correlation function extremum and having a correlation function value in a range included within a range whose end points are the correlation function values of the two image-dependent correlation function value points included in the first line, in combination with all the limitations in each respective claim. Claims 23, 30, 32, and 55-58 are allowed by virtue of their dependency.

Regarding claim 33, prior art does not disclose or fairly suggest an image-correlation optical position readhead including wherein at least an image-dependent correlation function value point closest to the extremum is excluded from the plurality of image-dependent correlation function value points bounding the correlation function extremum, such that estimating the spatial translation position is not based on the image-dependent correlation function value point closest to the extremum, in combination with all the limitations of the claim. Claims 34 and 35 are allowed by virtue of their dependency.

Regarding claim 41, prior art does not disclose or fairly suggest a speckle-image-correlation position transducer readhead wherein a ratio of peak-to-peak systematic error which repeats at a period corresponding to one image element pitch to the number of correlation function value points in a set used to determine a spatial translation position is not more than about .02 parts of the image element pitch per correlation function value point, when the peak-to-peak systematic error is expressed as a fraction of the image element pitch, in combination with all the limitations in the claim. Claims 42 and 43 contain allowable subject matter by virtue of their dependency.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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DAVID V. BRUCE
PRIMARY EXAMINER